FINAL TECHNICAL REPORT

GRANT #: N00014-00-10769

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GRANT TITLE: The effects of goal orientation on performance and self-efficacy in various conditions of task complexity and feedback availability.

AWARD PERIOD: 1 July 2000 – 30 Sep 2001

OBJECTIVE: An experimental study investigated the effects of individuals' dispositional goal orientation (performance and learning) on reactions to and performance in task environments that differ in complexity and feedback availability.

APPROACH: An experimental study investigated the effects of goal orientation, feedback availability (no feedback, outcome feedback, outcome with process feedback) and task complexity (high versus low complexity) on task performance, task self-efficacy, task interest, and task satisfaction. Feedback availability and task complexity was manipulated using a 3 X 2 experimental design. Subjects (approximately 120 students recruited from undergraduate management classes) were randomly assigned to experimental conditions. They then completed measures of goal orientation (Button et al., 1996), and initial task self-efficacy (Bandura, 1977; 1986). Subjects then performed a computerized managerial decision-making task, initially developed by Wood, Bandura, and Bailey (1990), that required subjects to complete 18 decision-making trials within a period of approximately 1.5 hours. The task was reprogrammed to provide the varying levels of task complexity and task feedback described above. Task performance was captured electronically and tracked across each of the 18 trials to determine rates of learning. Task self-efficacy was again measured following pre-determined trials of the experiment and following completion of all 18 decision-making trials. At the completion of the 18 trial sequence, subjects also completed measures of task interest and task satisfaction.

ACCOMPLISHMENTS: Accomplishments throughout the award period are as follows:

1. *Comprehensive literature search.* A graduate research assistant (Ben Teague), under the direction of the principal investigator, conducted a background survey of goal orientation and self-regulation literature, with a special emphasis on research published within the last year. This literature was useful in updating the design and administration of the current study.

2. *Development of a complex decision making task, feedback manipulations, and task complexity.* Professor Walter D. Davis, the principal investigator, and a doctoral research assistant developed the experimental task and experimental manipulations. We refined a computerized managerial decision-making task, initially developed by Wood, Bandura, and Bailey (1990). The task requires subjects to complete 18 decision-making trials within a period of approximately 1.5 hours. We developed program set-up files to manipulate task complexity and task feedback as described above. Furthermore, we programmed the task to administer a measure of task self-efficacy after the 6^{th} and 12^{th} trials of the experiment.

3. *Lab set-up.* The computerized decision-making task was successfully installed in the school of business computer lab in which the actual experiment took place.

4. *Pilot-testing of computerized task.* Professor Davis and two graduate assistants pilot tested the task in the computer lab to (1) ensure that the task is ready for the actual experiment, and (2) refine the experimental procedures themselves.

5. *Pilot-testing of computerized collection of performance data.* Professor Davis pilot tested the task in the computer lab to ensure that the computer program properly collects subject performance data. A sample output file was created and examined for (1) accuracy, and (2) suitability of the data structure for subsequent data analysis.

6. *Survey Construction.* Surveys for administration at the beginning and end of the experiment were developed. The first survey included measures of goal orientation, the NEO Five Factor Inventory (Big Five), self-esteem, initial task self-efficacy, and demographic measures. The second survey included measures of task satisfaction and task interest, as well as a final measure of task self-efficacy.

7. *Development of standard lab procedures.* In order to ensure a controlled experimental setting, it was necessary to establish a standard procedure for conducting the actual data collection. Procedures were established for: (1) initial set-up of the computers, (2) preliminary introduction of participants to the lab study, (3) administration of the pre-experiment survey, (4) instructing the participants on how to perform the decision-making task, (5) administering the post-experiment survey.

8. *Preparation of lab.* All necessary lab materials were assembled and organized. These materials include: pre-experiment surveys, post-experiment surveys, consent forms, printed task instructions, computer set-up instructions, lab procedure instructions, a cash box from which students are paid for participation, and receipts.

10. *Training of Ph.D. students.* Two doctoral students were trained in the aforementioned lab procedures. These two students served as lab assistants and played an increasingly active role in data collection. Both students performed well and often demonstrated a high level of initiative and independent discretion.

11. *Data Collection.* Data collection began in late March, 2001 and continued through July, 2001. A total of 120 students participated in the study.

12. *Data Analysis.* Data analysis began in August, 2001 and continues up to this date. Results of initial data analysis are presented below in the CONCLUSIONS section.

CONCLUSIONS: The most significant results of the experiment pertain to the relationships between learning orientation, performance orientation, feedback availability, satisfaction, self-efficacy, and performance. As expected, higher levels of feedback led to higher levels of performance. Furthermore, Performance orientation interacted with feedback availability to predict performance. Individuals who had a high performance orientation performed significantly worse when less feedback was available. However, the performance of individuals with a low performance orientation was unaffected by feedback availability. Thus, persons with a high performance orientation may desire and depend on more specific feedback in order to perform well. Finally, Learning orientation was found to be positively related to both post-training satisfaction and post-training self-efficacy. This finding suggests that persons high in learning orientation may react more positively to learning and training settings, regardless of feedback environment.

SIGNIFICANCE: The results of this research contribute to the research objectives outlined in NPRST's *Sailor 21* (1998). Specifically, the findings of this research have implications for the selection and classification of personnel and contribute to the Navy's efforts to create a "rich 'whole person' profile to match people along a multitude of dimensions into the 'best fitting' Navy job available" (p. 21). Outcomes of this matching process should include better performance, job satisfaction, and retention. An understanding of the relationship between goal orientation and these outcomes in various task environments is important because many Navy personnel "will be required to perform a broader range of tasks.... and will

operate more independently with fewer coworkers and a truncated chain of command" (p.24). Such personnel "will operate in very complex information-intensive environments", and "make substantially more independent decisions" (p.24). Thus, job assignments in the Navy are likely to vary in task complexity and feedback availability. Complex tasks and/or tasks for which process feedback is not readily available place greater demands on the individuals performing those tasks. Measures of goal orientation may provide an indication of a recruit's suitability for such environments, leading to more informed classification decisions.

Furthermore, goal orientation may be an indication of "trainability", and measures of goal orientation may result in more appropriate assignments of personnel to training. For instance, one important outcome of the training process is post-training self-efficacy. A better understanding of the predictors of post-training self-efficacy may lead to greater post-training retention. Post-training self-efficacy has been found to be related to several important post-training outcomes. For instance, Noe and Ford (1992) suggested that self-efficacy may have a positive effect on skill maintenance. Recent empirical studies (Gist, Stevens, & Bavetta, 1991; Stevens & Gist, 1997) support this assertion. Post-training self-efficacy has also been found to be positively related to subsequent job attendance (Frayne & Latham, 1987; Latham & Frayne, 1989), ability to cope with job demands, organizational and professional commitment, and satisfaction, and negatively related to intentions to quit the job (Saks, 1995). These findings point to self-efficacy as an important outcome of the training process. Matching personnel to training environments based on measures of goal orientation may result in higher levels of post-training self-efficacy, and thus higher retention rates.

MANUSCRIPTS UNDER PREPARATION:

A manuscript entitled “Goal orientation and feedback specificity: Affects on performance, satisfaction, and self-efficacy” is under preparation for submission to *The Academy of Management 2002 Annual Meetings* and will be submitted by January 4, 2002. Following submission to this conference, the paper will be submitted for publication in a high quality management journal such as *Personnel Psychology* or *Journal of Applied Psychology*.